REMARKS

The Office Action objected to the drawings under 37 C.F.R. § 1.83(a) for allegedly failing to show features specified in Claims 20-22. Furthermore, the Office Action objected to Claim 21 as improperly depending from Claim 20. Claims 20-22 have now been cancelled and these objections should be moot.

The Office Action further contended that Claims 1-4, 10, 11, 13, 16, 18, and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Conzola et al.* (US 5,185,638, hereinafter *Conzola*) in view of *Windross* (US 5,222,794).

With respect to amended Claims 1 and 13, *Conzola* does not disclose that "the multiple light emitting parts are arranged serially along...the direction of the straight line." (*Specification*, Para. 0038; Figure 8).

The *Office Action* alleges that *Conzola* teaches multiple light emitting parts being arranged serially along a direction of a straight line in Column 4, Lines 58-68 and in Figure 9. (*Office Action*, Page 7). Column 4, Lines 58-68 of *Conzola* recites:

> "The light source consists of a plurality of lamps, one lamp for each line of the fiber optic line converter. The plurality of lamps is packaged within an elliptical reflector such that the lamp filament is located at the focus of the ellipse. The elliptical reflector collects and focuses the lamp energy to the input face of the fiber optic bundle. This position is known as the light source focus position. The lamp spectrum is filtered by a heat reflecting mirror, eliminating infrared energy (700 nm) from reaching both the circuit board and the charge-coupled device (CCD) line scan camera."

The plurality of lamps in *Conzola* focuses the light output to a "light source focus position", so that the light emitted from the lamps converges at a point, rather than illuminating along a straight line. The cited section of *Conzola* merely describes the light source and focusing of the illuminated light. It does not teach or suggest an aspect of the lamps or the illuminated

light. The illuminated light described in the cited section is similar to the typical output of light from a conventional lamp.

Conzola further states "The tangential cylinder focuses the light bundle from each slit/collimator combination to a common focus." (Column 5, Lines 51-53). Thus, the illuminated light is focused to a point, rather than being illuminated along a straight line due to a serial arrangement of the light sources.

Furthermore, Figure 9 below shows the optical inspection machine is positioned to create optimal angles of incident light 21 so that light is focused on an inspection point. (Column 8, Lines 38-43).

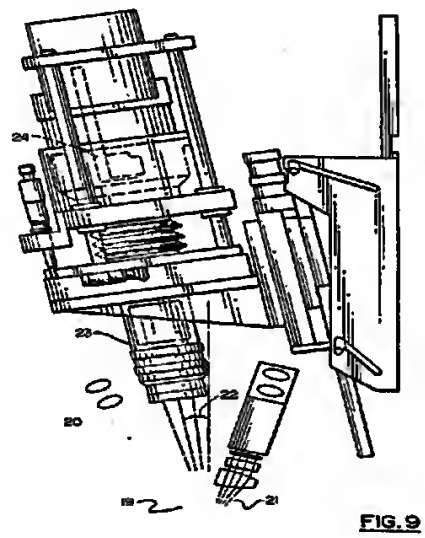

Figure 9 of *Conzola*

Figure 9 does not teach or suggest multiple light emitting parts being serially arranged along a direction of a straight line. A quad fiber optic line converter 20 provides four discrete fiber optic rectangular sources of illumination. These sources of illumination are clearly not arranged along a straight line, but rather, two fiber optic rectangular sources of illumination are positioned to the right of the imaging lens 23, while another two fiber optic sources of

illumination are positioned to the left of the imaging lens. From the perspective of the printed board being inspected, the fiber optic sources of illumination would appear in a square pattern, instead of being arranged serially side-by-side in a straight line.

In contrast, our invention has multiple light emitting parts 2 (each consisting of a light irradiating part 21 and a columnar lens 22) of identical length and identical shape that is modularized into one unit as shown in Figure 8 below.

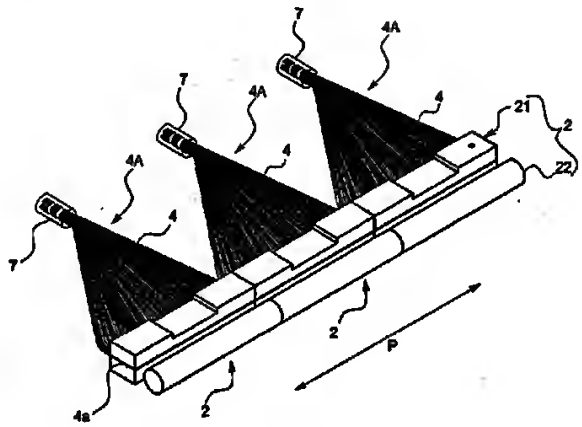

FIG.8

Figure 8 of the present invention

As seen in Figure 8, the multiple light emitting parts 2 are arranged serially along the direction of the line *P*. Thus, the light emitted from each of the individual multiple light emitting parts 2 does not converge to a common point as in *Conzola*, but rather the light is emitted along the length of the straight line. The light is emitted in this fashion due to the arrangement of the multiple light emitting parts along the straight line *P*.

In accordance with this arrangement, if the number of the serially arranged united light emitting parts 2 is modified, it is possible to prepare several different types of the light irradiation devices that irradiate the line light for a variety of desired inspection surface lengths. (*Specification*, Para. 0039). This promotes standardization of components of the device since the

light emitting part 2 is a basic component of the light irradiation device. Thus, manufacturing costs can be lowered as additional light emitting parts 2 can simply be attached to or removed from the light irradiation device to achieve a desired inspection surface length.

Thus, *Conzola* does not teach or suggest that "the multiple light emitting parts are arranged serially along...the direction of the straight line."

Further with respect to amended Claims 1 and 13, *Conzola* does not disclose "a monitoring bore...arranged to penetrate in order to monitor the object."

The *Office Action* alleges that *Conzola* teaches a monitoring bore in "the hollow part of item 20. (*Office Action*, Page 4). Item 20 of *Conzola* is a quad fiber optic line converter 20 that provides four discrete fiber optic rectangular sources of illumination. (Column 8, Lines 21-23).

Conzola does not provide any other details about item 20, and the *Office Action* simply infers that a "hollow part" exists within the quad fiber optic line. As can be seen in Figure 10 below, the fiber optic bundles 25 enter the fiber optic line converter 20. An isometric view is given in Figure 11 in order to show the series of cylindrical lenses cemented together and their placements relative to the quad fiber optic line converter. Each cemented lens corresponds to a rectangular fiber optic light source. (Column 8, Lines 54-58).

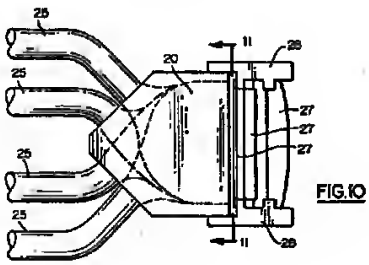

FIG.10

Figure 10 of *Conzola*


FIG.11

Figure 11 of *Conzola*

Thus, the "hollow part" referred to by the *Office Action* is not actually hollow, but contains the fiber optic lines that are flattened out in rectangular shapes corresponding to the cemented lenses shown in Figure 11. *Conzola* does not teach or suggest that any type of monitoring bore is housed within the fiber optic line converter 20.

In contrast, the monitoring bores of our invention is strip-shaped portions in the housing which allow light to pass through. Thus, the monitoring bores are said to penetrate the top plate 31 and the bottom plate 32 of the casing 3 so that light can reach the surface to be monitored.

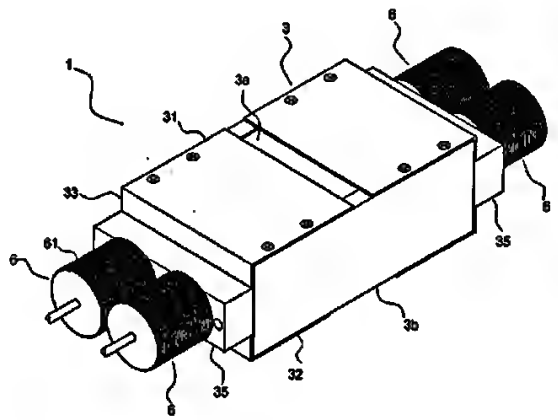

FIG.1

Figure 1 of the present invention

As can be seen above, each of multiple light emitting parts 2 is mounted on the casing 3 in a state of being parallel each other through a fixing member 34 at a position facing to the monitoring bores 3a and 3b. (*Specification*, Para. 0028). The light passes through the monitoring bore 3a and is directly emitted onto a work surface.

Conzola does not describe any type of opening in the fiber optic line converter 20, and the alleged "hollow part" certainly does not allow light to pass through a casing onto a work surface. Therefore, *Conzola* does not disclose "a monitoring bore is arranged to penetrate in order to monitor the object."

The Office Action cites to *Windross* to supplement the deficiencies of *Conzola*.

Windross simply discloses a vehicle headlamp with a single lens that can fit within the space constraints of an automobile frame. (*Windross*, Col. 3, Lines 21-30). *Windross* utilizes a single lens with multiple lens shapes. The beam pattern, such as high beam, low beam, fog light, etc. can be selected by rotating the lens so that then lens shape produces a desired beam pattern. (*Windross*, Col. 5, Lines 18-27).

The function and purpose of our invention is to address a problem that is neither recognized nor addressed in the relied upon *Windross* vehicle headlamp. *Windross* simply does not suggest using the vehicle headlamp for product inspection.

> "In relying upon a foreign patent to reject a claim, the Patent Office must construe the disclosure of the foreign reference strictly, and restrict the reference to what is clearly and definitely disclosed."
>
> *CITC Industries, Inc. v. Manow International Corp.*, 193 U.S.P.Q. 3656, 368 (S.D.N.Y. 1996).

The Office Action contended that it would have been obvious to modify *Conzola* with a teaching of the *Windross* since "both utilize the same means for delivering light, *i.e.*, fiber optics and there fore one of ordinary skill in the art would like to both inventions regardless of their intended use." (*Office Action*, Page 18).

However, it is not obvious to modify *Conzola* with a teaching of *Windross* to arrive at the claimed apparatus. *Conzola* is specifically directed to an illumination system used in surface analyzers for highlighting defects on printed circuit boards, while *Windross* is directed to a vehicle headlamp. Scanning of a printed circuit board for defects requires a precise focusing of a high-intensity beam to detect microscopic cracks in the surface of the circuit board. Vehicle headlamps obviously cannot be used to detect microscopic cracks in circuit boards.

Thus, *Conzola* and *Windross* disclose technology in two completely unrelated fields, and one skilled in either art would not be inclined to combine the references in the way the claimed invention does.

The Office Action further contended that Claims, 7, 14, and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Conzola* in view of *Windross* and further in view of *Biard* (US 5,148,303).

The Office Action contended that it would have been obvious to modify the combination of *Conzola* and *Windross* with a teaching of the *Biard* since "it is well known that LEDs consume less power, are longer lasting, and are more rugged than other light sources." (*Office Action*, Page 12).

However, it is not obvious to modify the combination of *Conzola* and *Windross* with a teaching of the *Biard* to arrive at the claimed apparatus. In *Conzola*, the light source "is packaged within an elliptical reflector such that the lamp filament is located at the focus of the ellipse." (Column 4, Lines 58-62). Furthermore, "illumination to each bundle is provided by a light source 7 consisting of a 24 Volt 200 Watt quartz halogen lamp" (Column 8, Lines 26-28) and is powered with a "28 volt DC power supply 5 such as a Lambda LFS50-28" (Column 6, Lines 32-35).

In *Windross*, the headlamp includes "a single ellipsoidal reflector which receives a light source at a first focal point of the reflector and light receiver means positioned at a second focal point for collecting light from the light source and reflector which can then be routed to an area to be illuminated, such as the headlight area in a motor vehicle." (Column 3, Lines 44-50).

Both *Conzola* and *Windross* disclose high-intensity light sources, and which use reflectors to focus light.

In contrast, *Biard* is directed to fiber optic sensors, such as temperature and pressure sensors, which contain LEDs, that can be placed on aircraft wings and that are not susceptible to interference caused by the composite wing material. (*See* Abstract).

The illumination systems used in *Conzola* and *Windross* require a high-intensity light source. An LED is not a high-intensity light source, and there is no suggestion of using LEDs as light sources in *Conzola* and *Windross*.

In addition, automotive headlamps and high-performance circuit inspection systems are themselves completely unrelated arts, and further, neither is related to sensor technology for aircraft structures. The *Office Action* has not identified a reason that would have prompted a person of ordinary skill in either the field to combine the elements of *Conzola* and *Windross* with a reference that discloses LED technology. Clearly, the *Office Action* has relied on impermissible hindsight that is afforded by the claimed invention in an effort to combine *Conzola*, *Windross*, and *Biard*.

Applicant submits that any combination of references that must be modified beyond their functions is suggestive of an unintended use of hindsight that may have been utilized to drive the present rejection. This is particularly true for an examiner who is attempting to provide a diligent effort that only patentable subject matter occurs. The KSR Guidelines do not justify such an approach. There is still a requirement for the Examiner to step back from the zeal of the examination process and to appreciate that a Patent Examiner has to wear both hats of advocating a position relative to the prior art while at the same time objectively rendering in a judge-like manner a decision on the patentability of the present claims.

As set forth in MPEP 2142,

> To reach a proper determination under 35 U.S.C. §103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

With respect to newly added Claim 23, *Conzola* does not disclose a line light irradiation device "wherein the multiple light emitting parts are modular components that can individually be added or removed to adjust the total operative length of the line light irradiated from the line light irradiation device." (*Specification*, Para. 0038).

Conzola does not disclose a modular system where the inspection device can be fitted with additional components to increase the surface area of the irradiated light. *Conzola* simply discloses adjusting the various angles of incidence and illumination of light to achieve a focused beam of light onto a surface.

Windross does not supplement this deficiency in *Conzola*. The vehicle headlight in *Windross* includes only a single bundle of optical fibers 14 configured in a splayed-out fashion having only a single binding part 12 as shown in Figure 1 of *Windross*. Thus, *Windross* does not disclose multiple light emitting parts that are "modular components that can individually be

added or removed to adjust the total operative length of the line light irradiated from the light irradiation device. "

Dependent Claim 10 has been cancelled. Dependent Claims 2-4, 7-9 and 11-12 depend from Claim 1, dependent Claims 14 and 16-19 depend from Claim 13, and newly added dependent Claim 23 depends from Claim 1. The dependent claims add features that more particularly define the invention and further distinguish over the cited references and prior art of record.

In view of the amendment to the present claims, it is believed that the case is now in condition for allowance and an early notification of the same is requested.

If the Examiner believes that a telephone interview will help in the prosecution of this matter, the undersigned attorney can be contacted at the listed phone number.

Very truly yours,

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